

WHAT IS CLAIMED IS:

1. A reactor for plating a metal onto a surface of a workpiece comprising:
a reactor bowl including an electroplating solution disposed therein;
an anode disposed in the reactor bowl in contact with the electroplating solution;
a contact assembly spaced from the anode within the reactor bowl the contact assembly including
a plurality of contacts disposed to contact a peripheral edge of the surface of the
workpiece, the plurality of contacts executing a wiping action against the
surface of the workpiece as the workpiece is brought into engagement
therewith, and
a barrier disposed interior of the plurality of contacts and including a member
disposed to engage the surface of the workpiece to effectively isolate the
plurality of contacts from the electroplating solution.
2. A reactor as claimed in claim 1 wherein the plurality of contacts are in the form of
discrete flexures.
3. A reactor as claimed in claim 1 wherein the plurality of contacts are in the form of a
Belleville ring contact.

4. A reactor as claimed in claim 1 and further comprising a flow path disposed in the contact assembly for providing a purging gas to the plurality of contacts and the peripheral edge of the workpiece.
5. A reactor as claimed in claim 4 wherein the purging gas assists in effecting the barrier.
6. A reactor as claimed in claim 1 wherein the contact assembly comprises:
an outer body member formed from a dielectric material;
a contact support member facilitating support of the plurality of contacts, the contact support member being disposed radially interior of the outer body member and being formed from a conductive material.
7. A reactor as claimed in claim 6 wherein the contact support member and the plurality of contacts are comprised of platinized titanium.
8. A reactor as claimed in claim 6 wherein the plurality of contacts are in the form of discrete flexures, each of the discrete flexures being disposed in a corresponding flexure channel defined between the contact support member and outer body member.

9. A reactor as claimed in claim 8 and further comprising a wedge member disposed to engage a corresponding groove in the contact support member along with the discrete flexures to thereby secure the discrete flexures with the contact support member.
10. A reactor as claimed in claim 9 wherein at least a portion of the wedge member assists in stiffening the flexing of the flexure contacts as a workpiece is brought into engagement with the contact assembly.
11. A reactor as claimed in claim 6 wherein the plurality of contacts are in the form of a Belleville ring contact having a common portion disposed in a notch at an interior face of the contact support member.
12. A reactor as claimed in claim 6 and further comprising a workpiece guide disposed radially interior of the contact support member.
13. A reactor as claimed in claim 6 wherein the barrier comprises a lip formed integrally with the outer body member and disposed to engage the surface of the workpiece.

14. A reactor as claimed in claim 6 wherein the barrier comprises an elastomeric seal member supported by the outer body member, the elastomeric seal member engaging the surface of the workpiece.
15. A reactor as claimed in claim 1 wherein the contact assembly is attached to the reactor using at least one latching mechanism.
16. A reactor as claimed in claim 1 and further comprising a processing head including the contact assembly, the processing head including a stator portion and a rotor portion, the rotor portion comprising the contact assembly.
17. A reactor as claimed in claim 16 wherein the contact assembly is detachably connected to the rotor portion by at least one latching mechanism.
18. A reactor as claimed in claim 16 and further comprising a backing member and a drive mechanism, the backing member and contact assembly being moved relative to one another by the drive mechanism between a workpiece loading state and a workpiece processing state, the workpiece being urged against the plurality of contacts of the contact assembly by the backing member in the workpiece processing state.

19. A reactor as claimed in claim 18 wherein the drive mechanism is substantially surrounded by a bellows member.
20. An integrated tool for plating a workpiece comprising:
a first processing chamber for plating the workpiece using an electroless plating process;
a second processing chamber for plating the workpiece using an electroplating process;
a robotic transfer mechanism programmed to transfer a workpiece to the first processing chamber for electroless plating thereof and, in a subsequent operation, transferring the workpiece to the second processing chamber for electroplating thereof.
21. An integrated tool as claimed in claim 20 wherein the second processing chamber comprises:
a reactor bowl including an electroplating solution disposed therein;
an anode disposed in the reactor bowl in contact with the electroplating solution;
a contact assembly spaced from the anode within the reactor bowl the contact assembly including
a plurality of contacts disposed to contact a peripheral edge of the surface of the workpiece, the plurality of contacts executing a wiping action against the surface of the workpiece as the workpiece is brought into engagement therewith, and

a barrier disposed radially interior of the plurality of contacts and including a member disposed to engage the surface of the workpiece to effectively isolate the plurality of contacts from the electroplating solution.

22. An integrated tool as claimed in claim 21 wherein the plurality of contacts are in the form of discrete flexures.
23. An integrated tool as claimed in claim 21 wherein the plurality of contacts are in the form of a Belleville ring contact.
24. An integrated tool as claimed in claim 21 and further comprising a flow path disposed in the contact assembly for providing a purging gas to the plurality of contacts and the peripheral edge of the workpiece.
25. An integrated tool as claimed in claim 24 wherein the purging gas assists in effecting the barrier.
26. A reactor for electrolessly plating a metal onto a surface of a workpiece comprising:
a reactor bowl including an electroless plating solution disposed therein;

a workpiece holder assembly within the reactor bowl the workpiece holder assembly including a workpiece support member disposed to contact a peripheral edge of the surface of the workpiece, and a barrier disposed interior of the workpiece support member and including a member disposed to engage the surface of the workpiece to effectively isolate the peripheral edge of the workpiece from the electroless plating solution.

27. A reactor as claimed in claim 26 wherein the workpiece support member is in the form of discrete flexures.
28. A reactor as claimed in claim 26 wherein the workpiece support member is in the form of a Belleville ring.
29. A reactor as claimed in claim 26 and further comprising a flow path disposed in the workpiece support assembly for providing a purging gas to the peripheral edge of the workpiece.
30. A reactor as claimed in claim 4 wherein the purging gas assists in effecting the barrier.
31. A reactor as claimed in claim 1 wherein the workpiece support assembly comprises:

an outer body member formed from a dielectric material;
a ring support member facilitating support of the workpiece support member, the ring support member being disposed radially interior of the outer body member and being formed from a dielectric material.

32. A reactor as claimed in claim 31 wherein the wafer support member is in the form of discrete flexures, each of the discrete flexures being disposed in a corresponding flexure channel defined between the ring support member and outer body member.
33. A reactor as claimed in claim 31 wherein the wafer support member is in the form of a Belleville ring contact having a common portion disposed in a notch at an interior face of the ring support member.
34. A reactor as claimed in claim 31 wherein the barrier comprises a lip formed integrally with the outer body member and disposed to engage the surface of the workpiece.
35. A reactor as claimed in claim 31 wherein the barrier comprises an elastomeric seal member supported by the outer body member, the elastomeric seal member engaging the surface of the workpiece.

36. A reactor as claimed in claim 26 wherein the workpiece support assembly is attached to the reactor using at least one latching mechanism.
37. A reactor as claimed in claim 26 and further comprising a processing head including the workpiece support assembly, the processing head including a stator portion and a rotor portion, the rotor portion comprising the workpiece support assembly.
38. A reactor as claimed in claim 37 wherein the contact assembly is detachably connected to the rotor portion by at least one latching mechanism.
39. A reactor as claimed in claim 37 and further comprising a backing member and a drive mechanism, the backing member and contact assembly being moved relative to one another by the drive mechanism between a workpiece loading state and a workpiece processing state, the workpiece being urged against the plurality of contacts of the contact assembly by the backing member in the workpiece processing state.

40. A reactor as claimed in claim 39 wherein the drive mechanism is substantially surrounded by a bellows member.

41. An apparatus for use in a reactor for plating a workpiece, the apparatus comprising:
a contact assembly;
a latching assembly operable to releasably attach the contact assembly to the reactor.

42. An apparatus for use in a reactor for plating a workpiece, the apparatus comprising:
a workpiece support assembly;
a latching assembly operable to releasably attach the workpiece support assembly to the reactor.